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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,426	09/13/2001	Shuichi Kanno	NIP-247	3908

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EXAMINER
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HANDAL, KAITI V

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/936,426

Applicant(s)

KANNO ET AL.

Examiner

Kaity Handal

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14 and 16-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 14, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 08- 238418 in view of EP 885,648 and JP 61-3040.

With respect to claim 14, JP 08-238418 discloses an apparatus for decomposition of fluorine compounds comprising: a reactor 2 having a catalyst 1 for decomposing fluorine compounds and a catalyst 7 for the decomposition of CO disposed downstream of the catalyst 1; a heater 4 for heating the catalysts; a moisture supplying unit for supplying moisture to the fluorine compounds; an oxygen supplying unit for adding oxygen; and an inert gas supplying unit for adding an inert gas as a

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diluent gas (see, for example, Figs. 1-2, abstract; sections 0017- 0018, 0021). Note that intended use is of no patentable moment in apparatus claims.

JP 08-238418 is silent as to whether fluorine compound decomposition catalyst 1 may be used to decompose at least one of PFC, HFC,  $\text{SF}_6$  and  $\text{NF}_3$ , and the catalyst 7 may be used to decompose  $\text{SO}_2\text{F}_2$  and  $\text{N}_2\text{O}$ . However, it should be noted that the type of the intermediate by-product formed therein depends on the type of exhaust gas passing through the reactor. Although JP 08-238418 shows one example of the fluorine compounds, such as CFC (chlorofluorocarbon), which are decomposed into  $\text{CO}_2$ , CO, HF, HCl, JP 08-238418 further discloses that the apparatus is for decomposition of organic halogenated compounds containing a fluorine, chlorine, bromine.

EP 885,648 discloses provision of a catalyst for decomposing fluorine compounds including  $\text{SF}_6$  or  $\text{NF}_3$  gas. Such catalyst includes a combination of aluminum and nickel oxide.

It would have been obvious to one having ordinary skill in the art to utilize the apparatus of JP 08-238418 to treat other types of fluorine compounds, such as  $\text{SF}_6$  or  $\text{NF}_3$  as taught by EP 885,648, so as to optimize the availability of the apparatus for different types of fluorine compounds thereof.

JP 61-3040 discloses that the other type of fluorine compounds, such as  $\text{SF}_6$  is decomposed into  $\text{SO}_2\text{F}_2$ .

JP 08-238418 further discloses the second catalyst 7 for decomposing the exhaust gas containing the intermediate by-product is the same as the catalyst of the

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instant claim. Therefore, the intermediate by-product of  $\text{SO}_2\text{F}_2$ , if there is any, is inherently decomposed and removed by the second catalyst of JP 08-238418.

With respect to claims 16-17, JP 08-238418 discloses that the catalyst for the decomposition of CO is noble metal (see, for example, sections 0021, 0037).

With respect to claim 18, JP 08-238418 further discloses a gas scrubbing tower 12 for removing components from a gas discharged from said reactor 2 by contacting said gas with alkaline aqueous solution (see, for example, abstract; Figs. 1-2).

With respect to claim 19, the apparatus of JP 08-238418 is substantially the same as that of the instant claims, but fails to disclose the specific type of the catalyst for decomposing said fluorine compounds as claimed.

However, EP 885,648 discloses provision of a catalyst for decomposing fluorine compounds including  $\text{SF}_6$  or  $\text{NF}_3$  gas. Such catalyst includes a combination of aluminum and nickel oxide.

It would have been obvious to one having ordinary skill in the art to alternately select an appropriate catalyst for decomposing fluorine compounds, such as the combination catalyst of aluminum and nickel oxide, in the apparatus of JP 08-238418 since such type of catalyst would increase the decomposition rate for the fluorine compounds as taught by EP 885,648.

4. Claims 14, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 885,648 in view of JP 08-238418 and JP 61-3040.

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With respect to claims 14, 18, EP 885,648 discloses an apparatus for decomposition of fluorine compounds including  $\text{SF}_6$  or  $\text{NF}_3$  gas, said apparatus comprising: a reactor 8 having a catalyst 9 for decomposing fluorine compounds and a scrubber 11 for neutralizing a part of carbon oxides, nitrogen oxides and sulfur oxides disposed downstream of the catalyst 9; a heater 10 for heating the catalyst; a moisture supplying unit 4 for supplying moisture to the fluorine compounds; an oxygen supplying unit 3 for adding oxygen (see, for example, Fig. 9, pages 2-4).

The apparatus of EP 885,648 is substantially the same as that of the instant claims, but fails to disclose whether a second catalyst may be provided to decompose at least one of oxides of carbon, sulfur and nitrogen and fails to disclose provision of an inert gas supplying unit as claimed. EP 885,648 is also silent as to the type of by-products, such as  $\text{SO}_2\text{F}_2$  and  $\text{N}_2\text{O}$  as claimed

However, the same teachings with respect to JP 08-238418 and JP 61-3040 apply.

It would have been obvious to one having ordinary skill in the art to provide an inert gas supplying unit in the apparatus of EP 885,648 so as to dilute the exhaust gas thereof as taught by JP 08-238418.

It would have been obvious to one having ordinary skill in the art to provide a second catalyst for decomposing at least one of oxides of carbon, sulfur and nitrogen in the apparatus of EP 885,648 for further removing the by-products generated in the decomposition process thereof as taught by JP 08-238418.

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With respect to claims 16-17, the same teachings with respect to JP 08-238418 apply.

With respect to claim 19, EP 885,648 discloses provision of a catalyst for decomposing fluorine compounds including  $\text{SF}_6$  or  $\text{NF}_3$  gas. Such catalyst includes a combination of aluminum and nickel oxide.

### ***Response to Arguments***

#### **35 USC 112**

Rejection made to claims (14, 16-19) under 35 USC 112 is withdrawn by examiner due to applicant's amendment.

#### **Prior Art Rejection**

Applicants argue that EP 885,648 does not disclose that the fluorine compounds are decomposed into harmful components including any one of  $\text{SO}_2\text{F}_2 + \text{N}_2\text{O}$ ,  $\text{SO}_2\text{F}_2 + \text{CO}$ ,  $\text{N}_2\text{O} + \text{CO}$ , and  $\text{SO}_2\text{F}_2 + \text{N}_2\text{O} + \text{CO}$ . Such contention is not persuasive as although EP 885,648 is silent as to the specific intermediate by-products as set forth in the instant invention, EP 885,648 discloses provision of an exhaust gas containing the same fluorine compound as that of the instant claim passing through the decomposition catalyst containing aluminum and nickel oxide which is also the same as that of the instant claim, and therefore inherently producing the same intermediate by-product as that of the instant claim. In any event, JP 61-3040 is relied upon for teaching that one of intermediate by-products formed in the decomposition process of  $\text{SF}_6$  is  $\text{SO}_2\text{F}_2$ .

Furthermore, it should be noted that the compounds in the exhaust gas are not parts of the apparatus.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaity Handal whose telephone number is (571) 272-8520. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KH

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10/16/2006

  
ALEXA DOROSHENK NECKEL  
PRIMARY EXAMINER